
Autologous iPSC-based therapy for radiation induced bladder injury

Grant Award Details

Autologous iPSC-based therapy for radiation induced bladder injury

Grant Type: Inception - Discovery Stage Research Projects

Grant Number: DISC1-08731

Project Objective: To prove that human iPSCs-derived smooth muscle progenitor cells can prevent and ameliorate late stage radiotherapy bladder injury.

Investigator:

Name:	Bertha Chen
Institution:	Stanford University
Type:	PI

Disease Focus: Bladder or Urinary Tract Disorder, Skeletal/Smooth Muscle disorders

Human Stem Cell Use: iPS Cell

Award Value: \$235,836

Status: Closed

Progress Reports

Reporting Period: Year 2 Final Report

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Grant Application Details

Application Title: Autologous iPSC-based therapy for radiation induced bladder injury

Public Abstract:**Research Objective**

To explore if iPSC-based therapy can prevent bladder damage due to radiation therapy, thereby limiting the unintended consequences of treatments for prostate, gynecologic and colorectal cancers.

Impact

This therapy impacts cancer survivors by preventing the permanent debilitating urinary symptoms due to radiation therapy. Currently there are no therapies to prevent radiation bladder damage.

Major Proposed Activities

- Optimize and characterize a chronic radiation cystitis rat model (6 months) using two radiation doses (25 Gy and 35 Gy) to establish time course and baseline changes in inflammatory parameters.
- Inject human iPSC-derived pSMCs into the bladder of rat model after radiation to evaluate the effect of pSMC on bladder function and scarring/fibrosis.

Statement of Benefit to California:

Pelvic cancers such as prostate, gynecologic, and colorectal cancers are often treated with radiation therapy(RT). Roughly 54,000 new cases are diagnosed annually in California. Despite RT advances, unintended chronic bladder damage cause debilitating bladder symptoms in up to 10% of patients. Therapies to ameliorate these symptoms are lacking and risky. We propose a stem-cell-based therapy. Our treatment could improve the post-cancer recovery of Californians who currently suffer needlessly.

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